INTRODUCTION

- Reduction in cerebral blood flow (CBF) due to aging has been associated with neurodegenerative disorders including Alzheimer’s disease and dementia.
- Experimentally, a condition of chronic cerebral hypoperfusion due to reduced CBF can be induced by permanent bilateral occlusion of common carotid arteries (2-vessel occlusion, 2VO) in rats.
- Honey is a natural product that has been widely used since long time as a nutrient, for its therapeutic effects in traditional medicine, and recently as an antioxidant.
- Oxidative stress leading to neuroinflammation resulting in neuronal apoptosis and death, is one of the mechanisms which is thought to play a significant role in chronic degenerative neurological disorders.

MATERIALS AND METHODS

- This study was conducted on male Sprague Dawley rats, weighing 200-250 grams.
- They were treated in accordance to the Guidelines for The Animal Care and Use Committee, Ministry of Health Malaysia.
- The rats were provided with standard food and water ad libitum.

RESULTS

Histopathological studies

Light microscopic images of hippocampal CA-1 region for SHAM, 2VO and 2VO+H groups

Hippocampal CA-1 Neuronal Cell Number

<table>
<thead>
<tr>
<th>Groups</th>
<th>Number of viable CA1 neurons in hippocampus</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHAM</td>
<td>300 ± 10</td>
</tr>
<tr>
<td>2VO</td>
<td>250 ± 10</td>
</tr>
<tr>
<td>2VO+H</td>
<td>150 ± 10</td>
</tr>
</tbody>
</table>

Number of hippocampal CA-1 neuronal cells in SHAM, 2VO and 2VO+H groups. Data represent the mean ± SEM [*p<0.001 (SHAM vs 2VO); # p<0.001 (2VO vs 2VO+H) post hoc (Tukey) ]

DISCUSSION: The present study revealed that chronic cerebral hypoperfusion-induced neurodegeneration by 2VO increases neuronal cell death in the hippocampus. In Honey-treated 2VO (2VO-H) rats, the viable neuronal cell count of the hippocampal CA-1 region was significantly higher as compared to the untreated 2VO group.

Conclusion: These results clearly indicate that Honey is an effective neuroprotective agent in chronic cerebral hypoperfusion-induced neurodegeneration in rats and can be fruitfully utilized in the management of Alzheimer’s disease.

Acknowledgement: The study was supported by grant from the RMC, International Islamic University Malaysia.